

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Inquiry Concerning the Deployment of)	GN Docket No. 16-245
Advanced Telecommunications Capability to)	
All Americans in a Reasonable and Timely)	
Fashion, and Possible Steps to Accelerate Such)	
Deployment Pursuant to Section 706 of the)	
Telecommunications Act of 1996, as Amended)	
by the Broadband Data Improvement Act)	

COMMENTS OF ADTRAN, INC.

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SUMMARY

ADTRAN comments herein on several issues raised in the Commission's *Notice of Inquiry* regarding the Twelfth Broadband Progress Report undertaken pursuant to Section 706 of the Telecommunications Act of 1996. ADTRAN supports the Congressional goal of universal availability of advanced services as reflected in Section 706, and this proceeding could be a real opportunity to review what progress we are making towards reaching that goal. ADTRAN urges the Commission to ask the right questions, gather the appropriate data and undertake the proper analyses, so that the resulting Twelfth Broadband Progress Report is not merely a rote exercise to produce a negative finding solely to allow the Commission to continue to rely on Section 706 for substantive authority to regulate aspects of the Internet.

Congress directed the Commission to answer a specific question in these Section 706 proceedings: "whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion." The *Notice of Inquiry* suggests the Commission will instead answer a different question of have we arrived at our destination yet. And the problem is exacerbated because in setting the "destination" of universal availability of advanced services, the Commission will be using a forward-looking benchmark for "advanced telecommunications capabilities," but a backwards-looking measure of the progress that has been achieved. In addition to its general recommendation that the Commission conduct an objective and thorough analysis of the actual question posed by Congress, ADTRAN does have some comments with regard to some of the specific questions raised in the *Notice of Inquiry*. Even incremental improvements in the analyses may enhance the usefulness of the Twelfth Annual Broadband Progress Report in serving as a roadmap for where Commission attention would be most productive.

ADTRAN does not believe there is a valid basis for increasing the current 25/3 Mbps speed benchmark for fixed broadband services to qualify as "advanced telecommunications capabilities." Those speeds can meet the video, data, graphics and voice requirements of consumers for the foreseeable future. Indeed, the *Notice of Inquiry* acknowledges that service providers are deploying broadband capabilities in advance of consumer demand for such speeds. Nor should the Commission adopt aspirational goals in this proceeding. For the Commission to speculate on future services, and what speeds will be necessary to support them and whether current deployment plans are on track to meet those demands, simply requires too much guesswork by the Commission.

ADTRAN supports the Commission's continued use of the 100 Mbps short term and 1 Gbps long term benchmarks for broadband to schools. ADTRAN is concerned, however, with the Commission's proposed analyses of whether broadband meeting these levels has been deployed to schools and libraries. The primary tool the Commission will use to assess broadband deployment only looks at the services purchased by schools, not the services that are available. And to the extent the Commission reviews deployment, it will only look at fiber-to-the-premises, despite the fact that other technologies can meet the benchmarks. ADTRAN believes there may very well be an adoption problem, but not an availability of services issue. To help address broadband adoption at schools, the Commission should re-examine the current

per student subsidy caps on WiFi/internal connections, and should implement its “preferred master contract” mechanism.

ADTRAN disagrees with the *Notice of Inquiry*’s proposal to examine a litany of additional factors, including data allowances, adoption rates, the availability of competitive alternatives, pricing and affordability of services, packet loss, privacy and security, and outage reporting. This broad range of “additional factors” looks suspiciously like a thinly-veiled effort to “move the goalposts,” and they go well beyond the specific question directed the Commission to answer. Issues that go to broadband adoption are important, but they should be addressed elsewhere. In light of the significant progress that has been made with respect to deployment of broadband with greater capabilities -- both wireline and wireless -- ADTRAN believes the Commission can conclude that while some work remains in expanding service to some customers, and work remains with respect to broadband adoption, advanced telecommunications capability is being deployed to all Americans in a reasonable and timely manner.

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COMMENTS OF ADTRAN, INC.

ADTRAN, Inc. (“ADTRAN”) takes this opportunity to comment on several issues raised in the Commission’s *Notice of Inquiry* regarding the Twelfth Broadband Progress Report undertaken pursuant to Section 706 of the Telecommunications Act of 1996.¹ Congress directed the Commission to determine and report annually on “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion,”² and the *Notice of Inquiry* seeks information that will allow the Commission to answer that question. ADTRAN offers observations on a few of the Commission’s preliminary assessments in the *Notice of Inquiry*, as well as suggested improvements to some of the proposed analyses.

ADTRAN, founded in 1986 and headquartered in Huntsville, Alabama, is a leading

¹ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 16-245, FCC 16-100, released August 4, 2016 (hereafter cited as “*Notice of Inquiry*”).

² 47 U.S.C. § 1302. Section 706 of the Telecommunications Act of 1996, Pub. L. No. 104-104, § 706, 110 Stat. 56, 153 (1996), as amended by the Broadband Data Improvement Act, Pub. L. No. 110-385, 122 Stat. 4096 (2008), as codified in Title 47, Chapter 12 of the United States Code. *See* 47 U.S.C. § 1301 *et seq.*

global provider of networking and communications equipment. ADTRAN's products enable voice, data, video and Internet communications across a variety of network infrastructures. ADTRAN's solutions are currently in use by service providers, private enterprises, government organizations and millions of individual users worldwide. ADTRAN thus brings an expansive perspective to this proceeding, as well as an understanding of the importance to individuals, communities and our country of robust and ubiquitous broadband. ADTRAN has been a strong advocate in Commission proceedings to help spur broadband deployment,³ and has itself launched a gigabit initiative that has far surpassed its goal of facilitating the deployment of 200 gigabit communities by the end of 2015, with over 350 gigabit communities deployed as of June of this year.⁴

ADTRAN certainly shares the Commission's and Congress' goal of universal availability of advanced services. And ADTRAN believes we are well on our way towards achieving that ultimate goal. In less than a generation, consumers have gone from the best-available wireline technology of 56 kbps dial-up modems to gigabit service to the home in hundreds of markets and spreading fast. Wireless carriers have built out fourth generation wireless services nearly

³ E.g., Comments of ADTRAN in GN Docket No. 15-191, filed September 15, 2015; Comments of ADTRAN in WC Docket No. 10-90 *et. al.*, filed August 8, 2014; Comments of ADTRAN in WC Docket No. 10-90, filed March 28, 2013; Comments of ADTRAN in WC Docket No. 10-90 *et. al.*, filed January 18, 2012; Comments of ADTRAN in WC Docket No. 10-90 *et. al.*, filed April 18, 2011.

⁴ See, *Press Release*, "ADTRAN Sets the Nation's Communities on the Path to Gigabit Transformation -- Utilities, MSOs and land developers deliver Gigabit broadband to over 350 communities," <http://phx.corporate-ir.net/phoenix.zhtml?c=67989&p=irol-newsArticle&ID=2178711>; <http://gigcommunities.net/adtran-reaches-200-gigabit-community-milestone/> ("More than 200 communities are now able to access [next-generation gigabit broadband services](#) as a result of ADTRAN's Enabling Communities, Connecting Lives program, ADTRAN announced August 11."); *Light Reading*, August 13, 2014, "Adtran Launches 'Gig Communities' Initiative," available at <http://www.lightreading.com/broadband/fttx/adtran-launches-gig-communities-initiative/d/d-id/710330>. See also, <http://gigcommunities.net/>.

everywhere, and are primed to deploy fifth generation mobile broadband services. Satellite service now provides service at speeds up to 40 Mbps to remote and insular areas from Geostationary satellites,⁵ with multiple proposals for much greater speeds through constellations of low-Earth orbit satellites.

Yet despite all of this positive news, ADTRAN is concerned that the *Notice of Inquiry* suggests that the Commission is using this inquiry to once again reach a negative finding to the Section 706 question of “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion,” regardless of the facts. ADTRAN submits these comments to guide the Commission to ask the right questions, gather the appropriate data and undertake the proper analyses, so that the resulting Twelfth Broadband Progress Report is not merely a rote exercise to produce a negative finding solely to allow the Commission to continue to rely on Section 706 for substantive authority to regulate aspects of the Internet. In our comments last year, we used a football analogy, urging the Commission not to “move the goalposts” arbitrarily to achieve the desired answer.⁶ But perhaps a better comparison to apply to these annual Section 706 inquiries would be a different football analogy – Lucy once again yanking away the football that Charlie Brown is trying to kick. We keep submitting comments, optimistically hoping that the Commission will conduct an objective and accurate assessment of the Congressionally-directed inquiry, but for the last six reports, those hopes have been dashed.⁷

⁵ See, e.g., <http://www.engadget.com/2012/02/14/viasat-surfbeam-2-pro-40mbps-satellite-broadband/>.

⁶ Comments of ADTRAN in GN Docket No. 15-191, filed September 15, 2015, at pp. 6-10.

⁷ See *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 15-191, 2016 Broadband Progress Report,

But maybe this year will be different, and we offer our comments in that hope.

**The Commission Seems Poised, Once Again, to Answer a Different Question
than the One that Congress Asked in Section 706**

Congress directed the Commission in Section 706(b) to undertake an annual assessment of “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”⁸ In the previous Broadband Progress Report, the Commission seems to have answered a different question – not whether reasonable and timely progress is being made, but rather, as the kids in the back of the car repetitively ask on a road trip, “are we there yet?” The *Notice of Inquiry* suggests that the Commission is poised once again to answer the wrong question.

Much of the *Notice of Inquiry* tees up proposals regarding the “destination” – including what constitutes “advanced telecommunications capabilities,” the benchmarks for consumer broadband, sources of data, pricing and adoption information, schools and libraries-specific standards, and whether additional issues, such as privacy and cybersecurity, must be considered. But nowhere does the Commission ask similarly detailed questions regarding how “reasonable and timely” progress towards the goal of universal availability of advanced telecommunications capability should be defined or measured.

Would progress towards universal availability of advanced services that is faster than any

31 FCC Rcd 699 (2016) at ¶¶ 119-124 (hereafter cited as “*Eleventh Annual Broadband Progress Report*”). See also., *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act; A National Broadband Plan for Our Future*, GN Docket Nos. 09-51, 09-137, Notice of Inquiry, 24 FCC Rcd 10505, 10508–10, ¶¶5-9 (2009) (summarizing the five prior broadband reports that found that, even though certain groups of Americans were not receiving timely access to broadband, broadband deployment “overall” was reasonable and timely during that period).

⁸ Telecommunications Act of 1996, Section 706(b), codified at 47 U.S.C. § 1302(b).

other rollout of new technology be considered “reasonable and timely”? If the only underserved areas where slow deployment progress was occurring were very low-density and very high-cost – which would not be served without massive subsidies – would that be “reasonable”? If areas where relatively slow deployment was occurring were low-income areas where rational businesses would not normally deploy because of very low adoption rates without subsidization of consumer broadband services – and taking into account the fact that the Commission has only recently adopted reforms to its Lifeline Program to subsidize broadband⁹ – would that be “reasonable”? To what extent should the Commission consider economic and demographic factors to be part of assessing “reasonable and timely” progress? These are complicated issues, and the answers are not necessarily a simple “yes” or “no.” But these and other similar questions are not even raised in the *Notice of Inquiry*, making it impossible for the Commission to address the specific question Congress asked the Commission to address in Section 706(b).

The problem of asking the wrong question is further exacerbated because even in trying to analyze the “are we there yet” question, the Commission seems to be using a forward-looking definition of the destination – “advanced telecommunications capability” – while using historic, backwards-looking data to decide if that goal has been reached.¹⁰ That mis-match means that there will inevitably be a lag between our arrival at the “destination” and the Commission declaring it so.

ADTRAN believes that continuing advances in broadband technology make it highly likely that sufficient capabilities will have been deployed to support advanced services when widespread demand for such services arises. Indeed, the *Notice of Inquiry* acknowledges that

⁹ *Lifeline and Link Up Reform and Modernization*, 31 FCC Rcd 3192 (2016).

¹⁰ *E.g.*, *Notice of Inquiry* at ¶¶ 41, 42, 58-63 and 80.

broadband deployment has stayed ahead of consumer demand:

Despite current adoption rates of fixed broadband services at speeds above our present benchmark, we note that deployment of fixed services at high speeds continues to progress at a faster pace than does consumer adoption.¹¹

The broadband deployment scenario appears relatively rosy. Deployment of fiber to the premises continues to expand, and the United States leads the world in gigabit deployments.¹²

Cable companies are deploying DOCSIS 3.1 technology, which supports 1 Gbps or greater service to homes over the current coaxial infrastructure.¹³ In addition, technology continues to evolve for twisted copper loops, with G.fast trials demonstrating speeds of 750 Mbps.¹⁴ And for mobile broadband systems, 5G technologies are on the horizon that will be blazingly fast, with download rates approaching 1 Gbps.¹⁵ Given the continuing investment by broadband service providers and the previous rollouts of advanced broadband technologies, ADTRAN is confident that the demand for new services and applications like 4K TV can be met when that demand develops in the not-too-distant future.¹⁶ Such a record, taken as a whole, suggests that it may very well be the case that “advanced telecommunications capability is being deployed to all

¹¹ Notice of Inquiry at ¶ 15.

¹² E.g., <http://www.telecompetitor.com/report-north-america-dominates-global-gigabit-deployments/>; <http://arstechnica.com/business/2015/07/att-gets-directv-merger-approval-must-deploy-fiber-to-12-5m-customers/> (AT&T will deploy fiber to 12.5 million customers).

¹³ E.g., <http://arstechnica.com/business/2015/08/comcast-planning-gigabit-cable-for-entire-us-territory-in-2-3-years/>; <http://www.cio.com/article/2966093/new-chipsets-lay-groundwork-for-gigabit-speeds-to-more-homes.html>.

¹⁴ E.g., http://money.cnn.com/2016/05/16/technology/gfast-internet-speeds/index.html?iid=TL_Popular.

¹⁵ E.g., <http://www.theguardian.com/technology/2014/jan/23/south-korea-internet-download-speeds-5g>.

¹⁶ See, e.g., <http://www.telecompetitor.com/nearly-all-vsps-content-producers-expect-wholesale-4k-uhd-adoption-in-2020/> (Broad 4k Video adoption expected by 2020).

Americans in a reasonable and timely fashion," but the questions asked in the *Notice of Inquiry* suggest the Commission is unprepared (or unwilling) to make such a determination.

Responses to Specific Questions Raised in the *Notice of Inquiry*

In addition to its general recommendation that the Commission conduct an objective and thorough analysis of the actual question posed by Congress, ADTRAN does have some comments with regard to some of the specific questions raised in the *Notice of Inquiry*. Even incremental improvements in the analyses may enhance the usefulness of the Twelfth Annual Broadband Progress Report in serving as a roadmap for where Commission attention would be most productive.

Speed Benchmarks for Fixed Broadband Services to Qualify as "Advanced Telecommunications Capabilities"

The *Notice of Inquiry* recognizes that one essential element of the Section 706 analyses is determining the metrics for defining "advanced telecommunications capability." For the last Broadband Progress Report, the Commission retained the previous report's speed benchmark of 25 Mbps download and 3 Mbps upload for fixed broadband services.¹⁷ The *Notice of Inquiry* asks whether it should continue to use or to modify that benchmark.¹⁸ In its comments in last year's proceeding, ADTRAN explained that if anything, the 25/3 Mbps benchmark was too high, given the statute's definition of "advanced telecommunications capabilities," the Commission's interpretation of that term, consumer adoption rates for high speed services, and consumer demand for services such as 4K TV.¹⁹ Nothing has changed that would alter our assessment.

Indeed, as the Commission observes, "the overall adoption rates seem to have not

¹⁷ *Eleventh Annual Broadband Progress Report* at ¶¶ 51-55.

¹⁸ *Notice of Inquiry* at ¶¶ 13-15.

¹⁹ Comments of ADTRAN in GN Docket No. 15-191, filed September 15, 2015 at pp. 4-7.

changed significantly from the findings in the *2016 Report*, and do not appear sufficient to warrant an increase from the existing benchmark of 25 Mbps/3 Mbps.”²⁰ Consumers have voted with their wallets, and apparently the majority of them do not favor speeds at or above 25/3 Mbps.²¹ The fact that service providers are deploying broadband capabilities in advance of consumer demand for such speeds²² ought to be applauded by the Commission – it should not be used as an excuse to raise the benchmark so as to justify additional regulatory authority. Thus, ADTRAN urges the Commission not to increase the 25/3 Mbps benchmark for fixed broadband service for purposes of the Twelfth Broadband Progress Report.

ADTRAN sees no useful purpose to the Commission adopting “an additional, long-term speed benchmark for fixed services”²³ for purposes of the Twelfth Broadband Progress Report. The current 25/3 Mbps is already forward-looking, to the extent it incorporates the capability to provide services such as 4K TV that will not be widely deployed for several more years, at least. For the Commission to speculate on future services, and what speeds will be necessary to support them and whether current deployment plans are on track to meet those demands, simply requires too much guesswork by the Commission. Unless the Commission has acquired access to an accurate crystal ball, it should not prescribe an aspirational goal as part of this proceeding.

²⁰ *Notice of Inquiry* at ¶ 14. ADTRAN also observes that even though 4K TV will not be widely deployed for several more years, see n. 16, *supra*, a download speed of 25 Mbps is more than sufficient to support 4K TV. Thus, 4K TV provides no basis for raising the benchmark. *Notice of Inquiry* at ¶ 17.

²¹ *Notice of Inquiry* at ¶ 14. *Cf.*, *Notice of Inquiry* at ¶ 77 (“Based upon the June 30, 2015 FCC Form 477 data and our 2015 Household data, we find the overall adoption rate for 25 Mbps/3 Mbps is 42 percent”).

²² *Notice of Inquiry* at ¶ 15.

²³ *Notice of Inquiry* at ¶ 19.

Latency Benchmarks

The *Notice of Inquiry* also seeks comments on latency benchmarks to use in determining whether the services being deployed qualify as “advanced telecommunications capabilities” for purposes of the Section 706 analyses. ADTRAN recognizes that it is not solely the speed of the broadband service that is relevant to whether an offering should be considered “advanced telecommunications capability.” Latency can also affect the quality of services that are provided over broadband links, particularly for interactive services. But in setting the benchmarks for “advanced telecommunications capability,” the Commission must bear in mind Congress’ definition of that term:

The term “advanced telecommunications capability” is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality ***voice, data, graphics, and video telecommunications*** using any technology.²⁴

The *Notice of Inquiry* would expand that statutory definition by adding “contemporary examples” of the listed services.²⁵ Thus, the *Notice of Inquiry* discusses the latency requirements of services including interactive gaming,²⁶ virtual private network platforms²⁷ and immersive augmented reality.²⁸ While these may be valuable services, it is far from clear that the ability to support them is part of the Congressional directive in Section 706 to assess the deployment of

²⁴ 47 U.S.C. § 1302(d)(1) (emphasis added).

²⁵ *Notice of Inquiry* at ¶ 27.

²⁶ E.g., *Notice of Inquiry* at ¶¶ 23, 27, 30 and 31. Cf., *ibid.* (“Is high-quality access to such services a component of advanced telecommunications capability?”).

²⁷ *Notice of Inquiry* at ¶ 27.

²⁸ *Notice of Inquiry* at ¶ 42.

“advanced telecommunications capabilities.”²⁹

The *Notice of Inquiry* acknowledges that latency is just one of the factors that affect consumers’ demand for broadband service, and that consumers appear willing to trade-off latency for speed and/or mobility.³⁰ Indeed, the Commission itself incorporated a high-latency option in the Connect America Fund Phase II Bidding subsidy program in recognition of the fact that -- particularly for insular areas most efficiently served by satellite -- latency, speed and cost must be balanced.³¹ Thus, setting a “hard and fast” latency benchmark for purposes of the Section 706 inquiry would appear to be inconsistent with the recognition that latency is just one factor that consumers trade off when acquiring broadband.

Nevertheless, to the extent the Commission will be selecting a latency benchmark, ADTRAN believes that the ITU standard of “an overall ‘mouth-to-ear’ latency of 150 ms or less”³² will support the specific services listed in the statute, so ADTRAN sees no need for the Commission to specify a more stringent standard for purposes of this year’s report. The *Notice of Inquiry* also mentions an ADTRAN White Paper, filed in June, 2009, in the Commission’s National Broadband Plan proceeding (Docket No. GN 09-51) that

synthesized the latency standards developed by various organizations, and argued that a round-trip latency of “35 ms upstream and 15 ms downstream” would be an appropriate standard for broadband providers to ensure proper functionality for the full spectrum of

²⁹ In Section 706(a), Congress gave the Commission some flexibility in selecting the regulatory tools by listing specific tools and then referring to “or other regulating methods that remove barriers to infrastructure investment.” 47 U.S.C. § 1302(a). In contrast, the definition of “advanced telecommunications capability” listed specific services and did not say “including” or otherwise provide the FCC with discretion to add to that list.

³⁰ *Notice of Inquiry* at ¶ 33.

³¹ *Connect America Fund*, 31 FCC Rcd 5949 (2016) at ¶¶ 28-37.

³² *Notice of Inquiry* at ¶ 31.

interactive applications *on their last-mile access networks*. (emphasis added)³³

ADTRAN wants to ensure that there is no confusion about its earlier recommendation, which was just addressing suggested latency standards for the last mile portions of the transmissions – not the standards that ought to apply to the end-to-end transmissions.

Speed Benchmarks for Mobile Broadband Services to Qualify as “Advanced Telecommunications Capabilities”

The *Notice of Inquiry* also seeks comment on the speed benchmarks that would apply to mobile broadband services, since the Commission has determined that advanced telecommunications capability should be deemed deployed only in geographical areas where consumers have access to both services.³⁴ In setting the speed benchmarks, the Commission needs to take into account the differences between fixed and mobile broadband that would justify separate benchmarks for those services for purposes of qualifying as “advanced telecommunications capabilities” for purposes of this Section 706 inquiry.

Two key differences with fixed and mobile broadband are the nature of the devices used in accessing the different networks, and the number of simultaneous users. Mobile broadband is normally accessed with a smartphone or tablet device. Given those relatively small screens, there is not likely to be much demand for 4KTV services by mobile broadband subscribers – as opposed to large TV screens, where the greater resolution of 4K TV makes a perceptible improvement. Thus, one of the uses driving the Commission’s selection of the 25/3 Mbps

³³ *Notice of Inquiry* at n. 66.

³⁴ *Notice of Inquiry* at ¶¶ 37-43. As ADTRAN explained in its comments in last year’s proceeding, to some extent consumers view mobile and fixed broadband as substitutes, since there are customers that rely solely on mobile broadband for their Internet access at home. *See*, Comments of ADTRAN in GN Docket No. 15-191, filed September 15, 2015 at pp. 12-15. Thus, requiring that both fixed and mobile broadband meeting the speed benchmarks be available may be an unnecessary hurdle to an affirmative finding in the Section 706 inquiry.

benchmark for fixed broadband – the expected demand in the future for 4K TV – would seem to be inapplicable to mobile broadband services. In addition, in setting the fixed broadband speed benchmark, the Commission relied on simultaneous access by multiple members of the household to different services.³⁵ But for mobile broadband, each device separately accesses the wireless network.³⁶ Given these differences, ADTRAN concurs with the *Notice of Inquiry*'s preliminary assessment that “an appropriate speed benchmark would be lower than the 25 Mbps/3 Mbps adopted for fixed broadband services.”³⁷

ADTRAN is concerned, however, that despite this recognition that a lower speed benchmark would be appropriate for mobile broadband services, the Commission still seems poised to adopt a benchmark that is higher than necessary to resolve the Section 706 question posed by Congress. The *Notice of Inquiry* suggests that the Commission will once again select a forward looking benchmark to select the speed, but then will rely on historic data to measure progress against that benchmark.³⁸ Indeed, one of the particular forward-looking services discussed in the *Notice of Inquiry* involves autonomous vehicles – vehicle-to-vehicle (“V2V”) and vehicle-to-infrastructure (“V2I”) communications.³⁹ However, V2V and V2I communications will be provided using Dedicated Short Range Communications in the 5.9 GHz band – it will not be provided over mobile broadband links, because of the need for low-latency,

³⁵ *Eleventh Annual Broadband Progress Report* at ¶¶ 37-40.

³⁶ The exception is tethering or hot spots. *Notice of Inquiry* at ¶ 41. However, the *Notice of Inquiry* merely postulates that such services were new, but are likely to grow.

³⁷ *Notice of Inquiry* at ¶ 39.

³⁸ *Notice of Inquiry* at ¶ 41: “Our determination of an appropriate speed benchmark must also be forward-looking and take into account mobile advanced telecommunications services that are anticipated for the future.”

³⁹ *Notice of Inquiry* at ¶ 42.

high-reliability and high-security.⁴⁰ It would be particularly egregious to rely on a future service that will not be provided via mobile broadband to set the benchmark for assessing whether mobile broadband is being deployed on a reasonable and timely basis.

In addition, as ADTRAN explained above with regard to setting a latency benchmark, consumers make trade-offs among the various capabilities that different broadband services offer. In the case of mobile broadband, customers are more than willing to accept somewhat lower speeds and reliability in exchange for the “service practically anywhere” mobility that wireless broadband provides currently. That is yet another reason to adopt a lower benchmark for mobile broadband service than the 25/3 Mbps that the Commission is proposing to retain for fixed broadband services.⁴¹ Taking into account all of these differences between mobile and fixed broadband, ADTRAN believes that the Commission should adopt a 10/1 Mbps benchmark for mobile broadband services to be considered “advanced telecommunications capabilities” for purposes of the Twelfth Broadband Progress Report. Moreover, such a benchmark represents the same speeds the Commission subsidizes in the Connect America Fund program for rate-of-return carriers.⁴²

Advanced Telecommunications Capabilities to Schools and Libraries

The *Notice of Inquiry* also asks questions related to the issue of deployment of advanced telecommunications capabilities to schools and libraries.⁴³ Congress recognized the importance

⁴⁰ See, e.g., *Revision of Part 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 13-49, Notice of Proposed Rulemaking, 28 FCC Rcd 1769 (2013).

⁴¹ *Notice of Inquiry* at ¶ 43.

⁴² *Connect America Fund*, 31 FCC Rcd 3087 (2016) at ¶ 25.

⁴³ *Notice of Inquiry* at ¶¶ 49-50.

of broadband deployment to schools and libraries, and specifically directed the Commission to address that issue.⁴⁴ ADTRAN agrees that it is critical to ensure that schools and libraries have broadband services, because they are essential to modern education. ADTRAN also concurs with the *Notice of Inquiry*'s proposal to retain the short-term benchmark of 100 Mbps per 1,000 students, and the long-term benchmark of 1 Gbps per 1,000 students.

ADTRAN does have some concerns, however, with how the Commission proposes to analyze the availability of broadband services that meet these benchmarks. The *Notice of Inquiry* proposes to rely principally on the Form 471's.⁴⁵ However, that form provides data on the services ordered by the schools and libraries – it does not provide information on the broadband services that are available to the schools and libraries. In addition, the *Notice of Inquiry* indicates that the Commission will utilize the analyses relied on in the Eleventh Broadband Progress Report. However, those analyses only examined the availability of fiber to schools and libraries. As ADTRAN explained in last year's Section 706 proceeding, there are multiple technologies that do not require fiber-to-the-premises that can provide broadband to schools and libraries that meets the long-term 1 Gbps per 1,000 students benchmark, including cable, wireless and advanced DSL.⁴⁶ And such alternative technologies continue to improve.⁴⁷

⁴⁴ See, 47 U.S.C. § 1302(b):

The Commission shall, within 30 months after February 8, 1996, and annually thereafter, initiate a notice of inquiry concerning the availability of advanced telecommunications capability to all Americans (***including, in particular, elementary and secondary schools and classrooms***) (emphasis added).

⁴⁵ *Notice of Inquiry* at ¶ 64.

⁴⁶ See, e.g., Comments of ADTRAN in GN Docket No. 15-191, filed September 15, 2015 at pp. 10-12.

⁴⁷ See, e.g., <http://www.lightreading.com/gigabit/dsl-vectoring-gfast/dt-looks-to-xgfast-as-ultra-fast-option/d/d-id/720779> (trials of XG.FAST at 11 Gbps).

While ADTRAN does not believe that there is a problem with the availability of advanced services to schools and libraries, ADTRAN recognizes that schools and libraries have not yet been purchasing broadband connections to the schools and libraries at the benchmark speeds. ADTRAN is hopeful that the Commission's relatively recent reforms to the E-Rate subsidy program should help.⁴⁸ And while it is a separate issue from the Congressionally-directed inquiry in this proceeding, there may be additional steps the Commission can take to spur schools and libraries to acquire higher speed broadband connections. First, ADTRAN would urge the Commission to re-examine the current limit of \$150 per student every five years for Category-2 subsidies.⁴⁹ Broadband connections to the school at the benchmark speeds are useful only if there is also connectivity to the students within the schools. However, based on ADTRAN's experiences with the E-rate program, it appears as if the current limits are inadequate to build out reliable internal connections and WiFi capabilities to connect the students. Second, the Commission adopted, but has not yet implemented, a "preferred master contracts" model that could enhance the efficiency of the E-Rate subsidy program.⁵⁰ The Commission should implement that measure, which would also help schools afford the necessary connectivity within the school.

Other Factors Affecting Deployment and Availability

The *Notice of Inquiry* also indicates the Commission believes it should examine several additional factors beyond "deployment" of facilities and services in its Section 706 inquiry:

⁴⁸ *Modernizing the E-rate Program for Schools and Libraries*, 29 FCC Rcd 8870 (2014)(hereafter cited as "*E-rate Reform Order*").

⁴⁹ *E-rate Reform Order* at ¶ 86.

⁵⁰ *E-rate Reform Order* at ¶¶ 170-173.

We continue to believe that the Commission should examine factors that affect access to broadband services beyond mere physical network deployment when making our determination of whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely manner.⁵¹

Included within this litany of additional factors are data allowances, adoption rates, the availability of competitive alternatives, pricing and affordability of services, packet loss, privacy and security, and outage reporting. This broad range of “additional factors” looks suspiciously like a thinly-veiled effort to “move the goalposts.”

In Section 706(b), Congress directed the Commission to answer a specific question: “In the inquiry, the Commission shall determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.” Issues such as competitive alternatives, pricing and affordability go to adoption of broadband services, not to deployment. The *Notice of Inquiry* also suggests examining fixed broadband services’ use of data caps as a potential source inhibiting broadband adoption.⁵² This is somewhat ironic, insofar as the Commission had suggested data caps as an efficient means of addressing network congestion problems in resolving the Comcast-BitTorrent dispute.⁵³ Congress dealt with affordability of services in Section 254, and the Commission has relied on that authority to expand the universal service and lifeline subsidy programs to make broadband more affordable in high cost areas and for lower income households. ADTRAN believes these concerns with affordability and adoption should not influence the Commission’s Section 706 inquiry into ***broadband deployment***.

⁵¹ *Notice of Inquiry* at ¶ 52.

⁵² *Ibid.*

⁵³ *Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications*, 23 FCC Rcd 13028 (2008) at ¶ 49 (“Moreover, Comcast has several available options it could use to manage network traffic without discriminating as it does. Comcast could cap the average users’ capacity and then charge the most aggressive users overage fees.”).

Likewise, the *Notice of Inquiry* raises privacy and security as Section 706 issues, because they can affect broadband adoption.⁵⁴ But adoption is not the same as deployment, which is the question asked by Congress. Carrying the *Notice of Inquiry*'s argument to its logical conclusion, the Section 706 inquiry would also have to evaluate the sufficiency of edge services, because under the Commission's "virtual circle" theory, the quality of edge services affects adoption. Privacy and security are too remote from deployment to be relevant to the question Congress asked in Section 706.

Answering the Question Congress Asked

In addition to seeking input on the various data and factors the Commission should evaluate in this proceeding, the *Notice of Inquiry* also asks commenters to provide their assessment of the Section 706 inquiry specified by Congress:

We invite comment on whether advanced telecommunications capability is being deployed to all Americans on a reasonable and timely basis in light of the data and analysis in this proceeding. We invite interested parties to address each of the factors that led to the Commission's negative finding in the *2016 Broadband Progress Report* based on any new information or changes to our analytical framework.⁵⁵

As explained above, ADTRAN disagrees with the Commission's analyses in the last broadband progress report, because it answered the question of "are we there yet," while using a forward-looking definition of the destination and a backwards-looking assessment of progress.

ADTRAN believes that when examined through the proper lens -- the lens specified by Congress -- the data will show that reasonable progress on broadband service capable of supporting advanced services is being made.

Given the higher costs of deploying terrestrial broadband services in rural areas, it is not

⁵⁴ *Notice of Inquiry* at ¶ 55.

⁵⁵ *Notice of Inquiry* at ¶ 85.

surprising (and not unreasonable) to expect somewhat slower deployment in rural areas. But the gap between broadband availability in rural areas and urban areas is being filled by high throughput satellites, and the Commission's recent reforms to the universal service subsidy program should also accelerate rural broadband deployment. Mobile broadband deployment is robust, with almost all of the country served by 4G service. And the Commission and service providers are active in laying the groundwork for 5G services. For schools and libraries, there still may be an issue with purchase of broadband services meeting the Commission's standard of 100 Mbps/1 Gbps per one thousand students, but that is an adoption issue, not a facilities deployment issue. In sum, there is work still to be done with broadband adoption across many sectors, but that should not prevent the Commission from making a positive response to the question of whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely manner.

Respectfully submitted,
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